DISCUSSION PAPER

February 2007 ■ RFF DP 07-04

A U.S. Perspective on Future Climate Regimes

William A. Pizer

1616 P St. NW
Washington, DC 20036
202-328-5000 www.rff.org

RESOURCES FOR THE FUTURE

A U.S. Perspective on Future Climate Regimes

William A. Pizer

Abstract

Momentum may be building for federal climate change policy in the United States. Assuming this leads to mandatory greenhouse gas regulations, the door will be open for the United States to constructively re-engage other countries concerning an international climate regime. Such a regime will need to recognize that binding international limits are unlikely to attract U.S. participation and, therefore, will require a different approach than the Kyoto Protocol. In particular, a future regime will need to accommodate and encourage, rather than force or constrain, domestic actions to focus more narrowly on major economies and emitting nations, to balance mitigation and technology objectives, and to engage developing countries on as many levels as possible. In place of a heavy emphasis on negotiating commitments in advance, there likely will need to be greater emphasis on evaluating actions in retrospect. Such an approach not only matches recent trends in the United States but arguably follows from broader experience over the decade since the negotiation of the Kyoto Protocol.

Key Words: climate change, international treaty, Kyoto, emissions trading

JEL Classification Numbers: H87, Q54, D62, D63

Contents

A U.S. Perspective on Future Climate Regimes

William A. Pizer*

Introduction

Since June 2005, there have been a number of climate policy developments in the United States suggesting that the possibility of mandatory, federal regulation of greenhouse gas emissions in the next few years is becoming more likely. Such an event would alter the dynamics of international negotiations over future climate regimes, returning the United States to a position where it could engage the international community in a meaningful way and, equally important, create an opportunity for the international community to move forward inclusive of the world's largest emitter and wealthiest country.

At the same time these developments are occurring in the United States, we find that the Kyoto Protocol now is nearly a decade old and that there is a great deal of new information available both about how climate policies work and how countries go about implementing such policies—information that could constructively influence the shape and feel of a new regime. We have, for example, arguably observed that a binding international regime is neither necessary nor sufficient for domestic action—at least at this initial stage. In the United States, any indication of international impingement on domestic policy frequently has a countervailing effect, even as there is an equally frequent expectation that other countries will reciprocate any meaningful U.S. action. Meanwhile, despite legally binding commitments, no country outside of Europe has a mandatory policy to comply with the Kyoto Protocol (and it is unclear, even with their policies, whether Europe will meet its commitment). We also have seen that effort—that is, some notion of expenditure or cost—tends to be a more natural point of convergence for national policy discussions than absolute emission levels. Policy proposals have tended to be more aligned on emissions prices, reflecting marginal costs, despite the Kyoto Protocol's focus on very specific emission quantities.[1] We have seen that concern over international action (or inaction) tends to focus on a small number of countries, either large economies or large emitters, and not the multitude of countries participating in the United Nations Framework Convention on Climate

* Senior Fellow, Resources for the Future. Prepared for the 2005 AFD-IDDRI Sustainability Review.

[1] Emissions reductions also might be a natural focal point except that reductions cannot be measured directly, requiring some baseline assumption that is never observed. Only emissions and prices are observed directly.

Change (UNFCCC) process. And we have begun to recognize the complex challenges surrounding technology development and developing country engagement—challenges that are not easily met by simple, market-based policies alone.

From these observations in the United States and abroad, we can draw at least five conclusions about how a future climate regime might usefully diverge from the existing Kyoto Protocol. First, there needs to be much greater deference to domestic interests, whether it is concern about excessive reliance on natural gas in the United States or an overwhelming priority on economic development in countries like China and India. There needs to be recognition of national differences in policy preferences; countries may pursue taxes, tradable permits, standards, regulation, or some combination of these. Second, international efforts need not focus on all countries, especially in the beginning. The potential for meaningful mitigation and concerns over competitiveness are limited, in most cases, to a small number of countries. Engaging in dialogue with those countries is likely to be more effective than seeking consensus among the nearly 200 countries participating in the U.N. process. Third, the regime needs to include technology development and investment activities (technology push), not just mitigation (demand pull). Fourth, efforts to engage developing countries need to proceed at all levels: project-based credits, sectoral or policy-based credits, and broader linkage with other issues such as energy security and trade. Finally, the emphasis needs to be more clearly on evaluating actions after the fact, rather than agreeing on targets and timetables in advance of any action.

If this latter suggestion seems relatively "squishy" compared to the elegance of legally binding commitments under the Kyoto Protocol, consider this: The Bonn and Marrakech agreements in 2001 literally renegotiated the protocol targets four years after they were set (Russia, for example, received an additional 130 million tons in sink credits). The exit of the United States from the protocol that same year further left the remaining participants with only a marginal aggregate commitment—if the Russian Federation and Ukraine sell their excess emission rights (a.k.a. "hot air") under the protocol to Europe, Japan, and Canada, those countries would be required to do very little. Finally, the Clean Development Mechanism (CDM) has the potential to flood the market with cheap credits—or not—depending on how the rules evolve. The question is not whether an agreement is squishy but how and when.

The remainder of this paper reviews recent policy developments both inside and outside of the United States and then draws conclusions about the implication for future climate regimes. The important thread throughout the discussion is that what we observe happening in public policy debates, in government proposals and decisions, and in responses to domestic action (or inaction) should inform the design of a future climate regime. This "practical" approach to

thinking about the regime and what it needs to accomplish given real world observations stands in contrast to an "idealized" approach that imagines what we think would be best based on some notion of welfare or well-being and typically absent any constraints. While it is useful to continue thinking about such an ideal as a guidepost for the long-run climate regime, a rigid focus on that ideal inevitably will miss opportunities, perhaps significant opportunities, to improve cooperation in the near term.

Recent Developments in the United States

Given the role of the United States as the world's largest emitter, wealthiest country, and key holdout from the Kyoto Protocol, any practical future regime will need to expend some effort to accommodate U.S. policy. Since 2002, the basis of U.S. climate policy at the federal level, as articulated by President Bush, has been voluntary efforts to achieve emissions reductions through 2012. Over the subsequent four years, however, the president's position has spurred a number of actions at the state level and in Congress that not only suggest a building momentum for mandatory federal action but also provide information about the kind of U.S. policy a global regime likely will need to accommodate.

Beginning at the state level, there is long history of initiatives to address issues like renewable energy and energy efficiency. Twenty states and Washington, DC, now have minimum, renewable energy standards. California and a number of other states also have pursued end-use efficiency programs since the mid-1970s. More recent developments specifically surrounding climate change have focused on vehicle emissions standards in California and tradable emissions limits in the northeastern states.

California's effort began in 2002, when the legislature passed and the governor signed A.B. 1493, authorizing the California Air Resources Board (CARB) to establish greenhouse gas emissions standards for light-duty vehicles. Under the U.S. Clean Air Act, California uniquely has the authority to set different vehicle emissions standards than the federal government (owing to its air quality problems). Other states then have the option of adopting California standards. In 2004, CARB finished its rulemaking and called for a 30 percent reduction in emissions per mile (essentially equivalent to a 30 percent improvement in fuel economy) by 2016. Since then, other states, including New York, have adopted the same standards. Currently, the Alliance of Automobile Manufacturers is suing CARB over whether this is really a fuel-economy standard in disguise, for which California would not have the authority to set a different standard (Meltz 2006). If the standards are upheld, they would go into effect in 2009.

Perhaps more significant among state efforts is the initiative of a group of northeastern states to establish a regional trading program for power plant emissions of carbon dioxide: the Regional Greenhouse Gas Initiative (RGGI). Initially, nine states negotiated the agreement, including New York, New Jersey, Connecticut, Delaware, Massachusetts, Rhode Island, New Hampshire, Vermont, and Maine. The proposed caps would limit emissions to 2005 levels through 2015, followed by a gradual decline. More relevant than the proposed caps, however, are innovative features that offer possible lessons for a federal program: a required 25 percent auction, new approaches to offsets, and consideration of future linkages (Kruger and Pizer 2006). While seven states signed a memorandum of understanding in December 2005, the governors of Massachusetts and Rhode Island declined to join, but the legislatures in Maryland (formerly an observer in the RGGI process) and Massachusetts recently passed laws requiring their states to join.

Parallel to this policy effort, twelve states, three cities, two U.S. territories, and several environmental groups have pursued a legal challenge against the federal government over its failure to regulate greenhouse gases under the existing Clean Air Act. An initial suit focused on the U.S. Environmental Protection Agency's (EPA) refusal to regulate carbon dioxide as a criteria air pollutant. That suit was dropped in favor of a suit over the EPA's failure to regulate automobile emissions of greenhouse gases. In July 2005, a split panel of judges rejected the states' challenge, partly on the basis of whether they had standing (e.g., whether the states suffered requisite injury) and partly on the basis of the EPA's discretion to address pollution problems in a variety of ways (Meltz 2006). An appeal was filed in March 2006, and the case could be heard by the U.S. Supreme Court later this year.

It is against this backdrop of burgeoning state-level action and lawsuits that the U.S. Senate increasingly has become the focal point of federal policy discussions. Beginning as far back as 1997, when it unanimously passed the Byrd-Hagel Resolution, the Senate regularly has been engaged in the climate change policy debate. In particular, that 1997 resolution stipulating that the United States would not join an international agreement without meaningful participation of developing countries or if the agreement would harm the U.S. economy was and continues to be a defining feature of U.S. rhetoric. More recently, in 2003, the Senate rejected—by a vote of 55-43—a proposal by Senators John McCain (R-AZ) and Joseph Lieberman (D-CT) to create an emissions trading program focused on year-2000 emissions levels. Despite the fact that its rejection can be viewed as consistent with the Byrd-Hagel sentiment, the vote was, at the time, viewed as something of a victory for environmental advocates seemingly only seven votes shy of

passing the proposal versus the unanimous Byrd-Hagel vote (Sen. John Edwards (D-NC) missed the vote but presumably would have voted in favor).[2]

In June 2005, during a series of debates over climate amendments to the 2005 Energy Policy Act, a slightly modified version of the McCain-Lieberman proposal garnered only 38 votes—at first glance suggesting a downward trend in support for action on climate change. Yet, that moment eventually may be viewed as an important turning point in the climate change policy debate. During that same hectic period, an alternative proposal by the ranking member of the Senate Energy Committee, Sen. Jeff Bingaman (D-NM), based on the recommendations of the National Commission on Energy Policy (NCEP) (NCEP 2004) was filed but not voted on. That resolution was rumored to have generated interest from Sen. Pete Domenici (R-NM), chairman of the committee, who eventually declined to support it. Instead, the two senators from New Mexico agreed to hold a series of hearings on the issue. And, not to leave its position ambiguous, the Senate passed by a vote of 54-43 a resolution calling for mandatory climate change regulation that, in contrast to the Byrd-Hagel resolution, stipulated developing country "engagement" and avoiding "significant" costs to the economy (versus "meaningful participation" of developing countries and "harm" to the economy). Perhaps even more remarkably, the same nonbinding resolution recently (in May 2006) passed the House Appropriations Committee as a rider on an appropriations bill, although it was almost immediately stripped from the bill on procedural grounds.

Since the votes last summer, Sens. Bingaman and Domenici have followed through with their commitment to a series of hearings, with the tone of these hearings becoming increasingly detailed. The first two hearings discussed climate change science and economics at a fairly high level of abstraction. In February 2006, the senators published a white paper posing a series of detailed questions about: 1) the appropriate point of regulation in a mandatory-emissions greenhouse gas trading program; 2) the method of allocation of greenhouse gas permits; 3) the design of offset programs; and 4) possible linkages with programs in other countries. Stakeholders and analysts were encouraged to respond to the questions and, after 140 separate respondents had filed submissions, the senators held a hearing in April 2006 with 29 of those respondents testifying. Most of the witnesses provided very detailed responses to the questions and many referenced the threat of a patchwork of state-level policies, of the sort just described,

[2] Note that because of Senate rules, 60 votes are necessary to guarantee passage.

as a reason to seriously consider the preemptive enactment of federal policy. Senator Diane Feinstein (D-CA) used the hearing as an opportunity to announce yet another Senate proposal, this one focusing on generous provisions to farmers and the agricultural community but otherwise quite similar to the McCain-Lieberman proposal.

There are three notable trends reflected in these latter developments. The first is that Sens. Domenici and Bingaman appear to be settled on some of the large design features of a mandatory program based on the NCEP proposal. That is, an intensity-based growth cap that eventually seeks to limit economywide emissions to roughly 2013–2014 levels. A key feature of the proposal is a $7 per ton of CO_2 safety valve, meaning that businesses are assured that compliance costs will not exceed that price, though with the consequence that emissions may not achieve the cap. This assurance of a cost limit has been a significant factor in the decision of many businesses and conservatives to embrace, or at least seriously consider, the proposal. Equally important has been the acknowledgement that a policy focused on near-term mitigation incentives alone is not the solution; those policies must be accompanied by a strong, longer term technology program focused on both research and development as well as commercialization. The Bingaman proposal and the underlying NCEP recommendation explicitly fund significant new investments in clean coal, capture and sequestration, nuclear, renewables and biofuels (for power generation and transport), vehicle efficiency (including diesel and hybrids), and more general efficiency for buildings and industry. A final feature of the Bingaman-Domenici formula is an explicit recognition that after the United States acts, it periodically will look back at the actions of other countries, both key competitors and major emitters, and adjust U.S. policy accordingly.

The second trend is that Domenici and Bingaman now are engaging, quite substantively, in the very detailed implementation questions that remain obstacles to progress after the aforementioned agreement on large design features. As recent experience with National Allocation Plans in Europe has demonstrated, allocation is a particularly difficult issue. Another challenging issue is where to regulate and who to include. These topics were the primary focus of the white paper and hearings and continue to be particularly important in the U.S. policy debate. (In this regard, it is notable that Massachusetts and New York recently have called for movement toward a 100 percent auction in the RGGI program.)

The third trend, parallel to the preceding one, is that companies are now becoming engaged at a serious and high level to think about what they believe a mandatory program ought to look like. Companies are hiring analysts, sponsoring studies, and contemplating both the possibility of regulation in the United States and their role in shaping it. The very detailed

responses to the white paper, as well as the fact that many other companies found themselves unprepared to address the questions, have spurred what appears to be a much broader deliberation among U.S. businesses.

While the Bingaman legislation (or one of the competing proposals) is far from a done deal, there is a growing sense that forces are converging toward U.S. action. State action is putting pressure on federal lawmakers. The Senate is passing resolutions calling for mandatory actions, holding detailed hearings, and, most importantly, finding some of its more conservative members engaged on the issue. Even the House appears to be interested in the debate.

Yet, all of these developments are transpiring almost without regard to action in other countries and without regard to a future international regime. The fact that the Bingaman proposal, for example, is not compatible with the targets and mechanisms in the Kyoto Protocol or with the E.U. Emissions Trading Scheme (ETS) is of almost no concern to policymakers. In fact, any sense that the international community is trying to influence U.S. domestic policy often results in a backlash against the effort. Ironically, these same policymakers are concerned that other key countries quickly initiate climate change policies comparable to proposed U.S. action, once that U.S. action occurs. The Bingaman proposal specifically includes a look-back provision, noted above, requiring periodic review of national actions in other countries and consequent adjustment of U.S. policy in response. Therefore, as we think about future regimes, even from a U.S. perspective, we need to review developments in other countries.

Climate Policy outside the United States

One of the most interesting and revealing features surrounding climate change policy around the world is the range of domestic responses that have been implemented or proposed. This is true despite the legally binding commitments to quantitative, economywide targets made by industrialized (Annex B) parties to the Kyoto Protocol; targets that in turn suggest specific, cap-based national policy responses. Among the Kyoto parties, four in particular are worth looking at because of the variety of their policies or proposed policies: the European Union, New Zealand, Canada, and Japan. It also is worth discussing progress with developing countries, as major emitters and trade competitors such as China and India continue to be a focal point for those concerned about both emissions and costs.

Chief among domestic climate policies is the EU ETS. With the exception of a few, limited, carbon tax programs in certain EU countries prior to 2003, the EU ETS is the first example of mandatory climate change mitigation policy in effect in the world. It stipulates an

absolute cap on covered sources, which include the power sector and several energy-intensive industries (refining, paper, etc.) and account for roughly 50 percent of total EU-wide emissions. This cap, allocated to each covered source, can be freely traded among sources, creating an EU-wide market for emissions reductions.

Like the NO_x program in the United States, member states in the European Union are responsible for allocating allowances within their borders. Unlike the U.S. program, however, member states also are responsible for setting their overall cap level for those sources as well. National allocation plans (NAPs), including both the cap level and allocation to sources, are proposed and then approved by the EU Commission. Importantly, NAPs must convey how limits on member-state sources within the ETS coupled with other national actions for non-ETS sources will achieve the country's Kyoto commitment. So far, we only have seen NAPs that deviate slightly from business-as-usual, remaining far from Kyoto commitments in many member states. The real test will arise later in 2006, when member states submit plans for the actual Kyoto compliance period of 2008–2012. Plans for the initial, warm-up phase of 2005–2007 presumably were subject to more lenient interpretations.[3]

At the other end of the spectrum of mandatory policies, New Zealand was on track until December 2005 to implement a CO_2 tax that would have started in 2007. The government announced in 2002 that they would implement an economywide carbon tax that would approximate the international price of emissions but be no more than NZ$25 per ton CO_2. Energy-intensive industries that faced international competition would be allowed to enter agreements to avoid the tax and agricultural methane and nitrous oxide (which account for more than half of total New Zealand greenhouse gas emissions) would be excluded entirely. The initial level of the tax was to have been NZ$15 per ton CO_2.

Japan similarly considered a carbon tax during internal government discussions at a level of ¥2,500–3,000 per ton of carbon (e.g., $6–7 per ton CO_2) but did not put a proposal forward as an official government position. Instead, Japan has pursued a primarily voluntary, incentive approach based on initiatives by the Keidanren (the Japanese business association), "top-runner" efficiency standards, and, more recently, a voluntary trading program and up-front payment for credits through the CDM. The latter two efforts, along with a mandatory reporting program, form

[3] More information can be found at http://europa.eu.int/comm/environment/climat/emission.htm.

the Kyoto Target Achievement Plan, approved by the cabinet in 2005 to reduce Japan's emissions by the estimated 6 percent necessary to meet its Kyoto commitments.

In the middle of the discussion over mechanisms sits Canada. Canada announced plans for a Large Final Emitter (LFE) trading program in April 2005 for the oil and gas, thermal electricity, mining and manufacturing sectors. The program is based on intensity targets; that is, the emissions limit for firms is indexed to industry output. Further, the program has a C$15 per ton CO_2 safety valve. Like the Bingaman proposal, Canadian firms always can buy extra allowances in the domestic program at C$15 to meet the target, thereby providing a cost cap to firms. Of course, this does not comport well to the Kyoto Protocol, which includes neither an index to output nor a safety valve. However, it does represent a compromise—perhaps a necessary one—between industry taking on a mandatory emissions program while leaving the government responsible for meeting the specifics of the Kyoto Protocol. In any case, concerns about the LFE comporting with Kyoto have been dwarfed by concerns that Canada will not even implement the LFE program. In March 2006, after the government changed parties, the environment minister indicated in a letter to a Toronto newspaper that emissions trading may be part of an eventual strategy to reduce greenhouse gas emissions.

Meanwhile, virtually all major countries with emissions commitments under the Kyoto Protocol, as well as firms with domestic commitments under existing or proposed national policies, are engaged in project-based efforts located in developing countries. The World Bank is now managing nearly $1 billion in various project funds for different countries. Natsource, a brokerage firm, recently capitalized more than $500 million in private funds to purchase credits. A similar fund in Japan recently collected $150 million in private funds.

Despite this large interest on the demand side, there is considerable controversy about whether this approach, and specifically the CDM, is working on the supply side. While slow to ramp up, as of April 2006 there were 161 registered projects, 4.5 million issued Certified Emission Reduction credits (measured in tons of CO_2-equivalent), and 340 million credits slated to be issued from registered projects through 2012. There are more than one billion more credits associated with other CDM projects in some phase of design. For reference, the annual surplus (e.g., extra allowances above what they need) expected in Russia and Ukraine is about 840 million tons and total U.S. emissions are about 7 billion tons per year. The CDM is therefore a large supply but not so large compared to Russian surplus supplies. What also is remarkable

about the supply of CDM credits is the make-up: Roughly half are HFC23 projects; another sixth are N_2O. That leaves about a third as energy-related projects. Whether these metrics suggest modest success or not is somewhat in the eye of the beholder.[4] Critics say this is too little action in the wrong sectors or point to the inherent problem of establishing baselines for individual projects; proponents say this is just the beginning.

Meanwhile, the larger Kyoto model for developing countries—that they eventually will graduate to emissions commitments—is being challenged despite promises of generous allocations or side-payments. The problem is that developing countries may not see accepting a limit on their carbon dioxide emissions, essentially their use of fossil fuels, as a reasonable trade-off at any price.[5] Equally important, there also is a limit to the willingness of industrialized countries to pay a high price to developing countries for participation, perhaps even more so if it is paid in a very decentralized way (versus subsidizing technologies produced by the industrialized countries themselves). At the end of the day, some arrangement should be possible if developing countries become sufficiently concerned about climate change. However, the question for a future climate regime is: What do we do in the meantime?

Implications for Future Climate Regimes

There are two immediate observations from this brief survey of actual and proposed policies. The first is that Kyoto parties are pursuing a variety of policies that are only loosely connected to their commitments. Even the European Union, with its trading program, cannot be confident that it will achieve its target given that 50 percent of its emissions remain outside of the program. Estimates by the European Environmental Agency suggest that compliance will depend on additional measures as well as decisions about the use of Kyoto flexibility mechanisms. Other countries such as Canada, Japan, and New Zealand face even greater challenges given the absence of any mandatory programs so far. The second immediate

[4] In a recent workshop, both perspectives were heard. See http://www.weathervane.rff.org/process_and_players/Policy_Collaboration/Understanding_Translatlantic_Differences.cfm.

[5] There is a useful analogy to the plight of coal mines and mineworkers. Plenty of studies have shown that it would be relatively cheap to pay them to shut down. Yet, in conversations with mining companies and mineworkers, they are less than enthusiastic about giving up their business and way of life in exchange for a government promise of its cash value. Similarly, developing countries may be reluctant to give up the tried-and-true approach to economic growth—freely burning fossil fuels—in exchange for industrialized country promises of allowance revenues or side payments.

observation is that momentum appears to building for mandatory action in the United States despite any international commitment, while the European Union actually made its decision to implement the ETS before it was certain the Kyoto Protocol would come into force.

The implication of these observations seems to be that binding international commitments are neither necessary nor sufficient for domestic actions in the near term. Countries face a variety of domestic constraints and pressures that trump international pressure in shaping policy. The form of a New Zealand policy undoubtedly is shaped by the relative share of agricultural emissions in their inventory. In the United States, comments on the Bingaman-Domenici white paper were surprisingly favorable to an upstream program—something that has been eschewed in Europe (an upstream program would regulate producers of fossil fuels rather than users). Meanwhile, we have seen evidence that voluntary programs in some parts of the world—particularly vehicle efficiency standards in Europe and Japan—may work.

Further, the notion of binding international commitments poses particular hurdles in the United States. As noted earlier, international constraints on domestic policy typically are unwelcome. From a legal standpoint, there is the additional problem that the United States typically does not ratify a treaty unless there is legislation in place that ensures compliance (CRS 2001). The bottom line, as many scholars have noted, is that international treaties inherently are voluntarily from the perspective of sovereign countries, making binding commitments something of an illusion.

Under these circumstances, it seems that the most useful feature of a future climate regime may be to support and encourage of a wider variety of domestic actions. While there may be an evolution toward specific emissions commitments, an explicit sharing of responsibility, and a common architecture, such developments probably need to come after nations first explore their own domestic capacity, resolve, constraints, and circumstances. Much like nuclear disarmament, the World Trade Organization, and the establishment of the European Union, all of which evolved from simpler beginnings as experience with, and trust in, partners and institutions grew, we are more likely to see an evolutionary development of a global climate regime.

Another lesson that can be borrowed from the latter two examples of evolving international institutions is that both started with a small number of like-minded countries and expanded over time. Climate change naturally lends itself to this approach because a relatively small number of countries are responsible for the overwhelming volume of greenhouse gas emissions. Those same countries also are the ones typically viewed as competitive threats to business. In the United States, the focus typically is on Europe, Canada, Mexico, Japan, China,

and India. Meanwhile, a fully global negotiating process run by consensus, like the United Nations, easily is sidetracked by other nations with special interests and little to contribute.

A smaller process, including the abovementioned nations and a few others, recently was proposed by former Canadian Prime Minister Paul Martin under the guise of an "L-20" forum, referring to the leaders of 20 key countries. He argues that this type of forum could be used to deal with issues where political leadership is necessary to move the world forward, such as climate change, just as the G-20 forum of finance ministers has been used to deal with economic issues. The idea also has been posed by scholars similarly struck by the asymmetry of influence and responsibility in the U.N. process and need for bottom-up developments among key countries. Finally, one need only look at the implementation of domestic policies to note that most exclude sources below a certain threshold; it is therefore somewhat remarkable that we have approached climate change with the idea of including all sources—that is, achieving consensus among all U.N. nations.

Therefore, a second suggestion for a future regime would be a narrower focus on key emitters and economic powers. This same focus is articulated in the Bingaman proposal and could work alongside the U.N. process rather than replace it.

In addition to a more flexible approach to commitments and participation, the question of substance remains. While much of the review of domestic policy initiatives focused on mandatory regulations, there is a growing recognition that mitigation policy alone will not deliver desired technology developments and that there is a trade-off to be managed between near-term mitigation and long-term technology development. The United States, in particular, has emphasized technology policy and the Bingaman proposal, while mandatory, includes a significant technology component. The economic literature also points out that there are two market failures surrounding climate change—the externality associated with emissions and the broader underincentive to innovate because the returns to innovation are difficult for the innovator to capture—therefore two policy instruments are required to achieve an efficient outcome. Equally or more important, there may be political limits on the capacity to properly price the emissions externality, adding to the importance of technology policies that often are welcomed by industry (as more of a carrot than stick). Finally, there well may be commitment problems with pricing policy alone that technology policy can circumvent.

All of this points to the importance of a future regime that recognizes the role of technology investments alongside mitigation efforts. Such a feature likely will broaden the appeal of the climate regime. But more importantly, it better matches the features of the problem,

which are fundamentally about technologies that eventually can move the world's energy system to a zero-emissions, concentration-stabilizing world. Recent experience with the EU ETS, for example, has put a high premium on near-term targets coupled with considerable uncertainty about future commitments, as prices have spiked to €30 per ton CO_2. Such a situation may be inefficiently diverting resources towards short-term, crisis efforts to meet a target rather than toward steady, sustained efforts to find long-term technology solutions.

After a more flexible architecture, a narrower focus on key countries, and an explicit recognition of the mitigation–technology policy balance, a fourth component of a future regime needs to engage developing countries and do so on as many levels as possible. This follows from the observation that developing countries have, so far, been unwilling to embrace emissions trading with industrialized countries, even with offers of side-payments or generous allowance allocations.[6] Even if they were convinced, their capacity to implement market-base policies is suspect (Bell and Russell 2002). It also follows from the observation that unquestionably the largest source of cheap reductions in global trading would be developing countries—meaning they cannot be ignored. So, until both their interest and capacity match that of the industrialized countries, we need to consider practical policies that will reduce emissions in developing countries as cost-effectively as possible.

Based on the earlier discussion surrounding the CDM, it seems prudent to consider more avenues to engage developing countries. Two proposals were discussed at the recent COP/MOP meetings: sector-based crediting and credit for avoided deforestation. In the current environment, both have the capacity to inject a large number of credits into the system and may represent too much supply. In the longer term, however, they represent two of three useful directions. First, there needs to be a willingness to encourage developing-country policy reforms at the sectoral level. Whether we are talking about efficiency standards, energy-market reform, or other carbon-saving initiatives, there should be financial incentives on the table. This might be a package of sector-based credits or it might be linked progress in other areas of national interest (e.g., trade or technology). Second, there needs to be a more flexible approach to project crediting that moves away from ton-for-ton accounting. Credit for deforestation is one idea but the broader approach would be to standardize projects that are desirable, ideally (but not necessarily) keeping the right incentive at the margin. For new technologies where there are likely to be learning spillovers, or

[6] See description, for example, of developing country reaction to discussions of the second Kyoto commitment period at the COP/MOP-1 in Aguilar et al. (2005).

for projects with other co-benefits, the incentive could be higher. The finicky approach to baselines in the CDM needs to be replaced with a more streamlined, though perhaps not as environmentally pure, approach.

Finally, Victor (2006) also makes the point that even more than projects and sectoral policies, major infrastructure deals have the potential to alter dramatically emissions trajectories. If Russia, for example, could be encouraged to pipe gas to China, the potential emissions reductions from less coal use in China could match the reductions attributable to the entire EU ETS over the next decade. Such deals are unlikely to happen under a purely climate-focused initiative but approaching major developing countries about such choices and looking for ways to tie them to issues of greater concern—economic development, security, or conventional pollution—ought to be a key element of an effort to engage developing countries.

As a final regime suggestion, given the broader parameters for countries joining such a regime on the front end, it will be important to include mechanisms to evaluate actions on the back end. In other words, as we encourage countries to make more flexible, nonlegally binding commitments initially (relative to the Kyoto Protocol), we should instead focus our energy on a clear commitment to evaluate what actually happens after the fact. Bodansky et al. (2004) refer to this as a policy-and-measures approach (or sometimes pledge-and-review). Here, measures describe the steps to be taken as well as the metrics for evaluating action. Such evaluation would be different from the entirely self-reported approach under the UNFCCC and would be more like the periodic country reviews conducted by the Organization for Economic Cooperation and Development. Put another way, at the same time we back-off legally binding emissions limits in the Kyoto Protocol, we do not want to go all the way back to the UNFCCC. It is reasonable to require mandatory domestic regulations to address climate change, with the particulars left up to individual nations and evaluation left to an after-the-fact process. This matches the model for cooperation conveyed in the look-back provision of the Bingaman proposal.

An interesting observation from the various policies that were summarized earlier is that all have tended to converge in effort as reflected in the price placed on carbon dioxide. Table 1 summarizes the prices associated with various proposed and actual climate policies. While not exhaustive, it shows that there has been a remarkable convergence among prices, reflecting effort (at least at the margin). Autarkic prices upward of $50 per ton of CO_2 and varying by more than $50–100 across countries, which were predicted by most models in order to comply with the Kyoto Protocol, have not occurred, suggesting that despite treaty commitments focused on emissions, a more natural point of agreement may be prices. While there has been a tendency not to want to put a price on environmental concerns, especially during environmental negotiations,

economic interests and a focus on effort appears to play a greater role when domestic policy is enacted. Moving forward, it may be necessary to admit this reality and focus the evaluation more clearly on prices and effort, rather than solely on emissions and environmental outcomes.

Conclusion

The starting point for a future climate regime ought to be the experience gleaned over the decade since the creation of the Kyoto Protocol. Part of this is experience is with the United States—where binding commitments have proven to be especially problematic—but much of this experience has occurred elsewhere. Ten years ago, the architects of the protocol only had economic theory, experience with various nonclimate environmental policies, and dissatisfaction with outcomes arising from the UNFCCC from which to build. They developed a global system based on legally binding emissions limits, flexibility mechanisms that leaned on market-based responses, the idea that domestic policies would evolve to meet the protocol's requirements, and the assumption that developing countries would graduate to industrialize countries' commitments. Much has been learned since then.

Most importantly, we have seen that domestic policies tend to evolve only partly in response to international commitments. Even in the European Union, where arguably the greatest synergy between the protocol and domestic policy exists, it is not clear that Kyoto commitments will be met. No other Kyoto party even has adopted mandatory climate change regulations and even those that have been proposed are less congruent to the Kyoto architecture than EU policy. Meanwhile, events in the United States suggest that mandatory domestic controls may occur sooner than previously though, even without a binding commitment under the Kyoto Protocol. Legally binding commitments, it turns out, also are at odds with the U.S. approach to treaty law. All of this suggests that a future regime needs to be flexible in embracing a wider range of domestic policy responses and less rigid in terms of attempting to impose international constraints than the Kyoto Protocol.

A second conclusion is that a future regime should focus initially on the world's largest emitters and economies, rather than attempting to immediately implement a global solution. Experience with other significant global issues, such as trade, monetary union, and arms control, suggests dealing with key, like-minded nations first. Experts ranging from academics to leading politicians have suggested that climate change, especially, requires such an approach. Finally, rhetoric in countries like the United States repeatedly has emphasized concern over competitiveness with key trading partners, suggesting that the relevant universe for U.S. engagement is limited to a much smaller number of countries than the UNFCCC. All of these

arguments support the idea of pursuing negotiations among a small group of countries, perhaps in parallel and as a complement to continued UNFCCC work.

Aside from these suggestions for shape and form, two substantive issues deserve particular attention within the design of a future climate regime. The first is recognition of the balance between efforts on near-term mitigation and long-term technology development. Economic theory concerning market-failures in the market for innovation and arguments about the time consistency of policies that only price emissions both point to the need for technology policies to complement market-based incentives to reduce emissions. This also aligns with political difficulties achieving CO_2 prices likely to spur innovation—particularly in the United States, but likely elsewhere as well. While the Kyoto Protocol focused almost exclusively on near-term targets, a future regime should have a longer term view not just on targets but on technology development. To do this, there needs to be an acknowledgement that technology policies have an important role to play, even as a high value is place on mandatory efforts to begin limiting emissions.

The second substantive issue is broader and more flexible engagement of developing countries. The Kyoto model focused on project-based crediting with the idea that developing countries would graduate to the cap-like commitments of industrialized countries. The emerging reality is that such a future neither is being embraced by developing countries nor is arguably practical given institutional constraints. Further, project-based crediting alone faces significant limitations. Therefore, a future regime could constructively consider at least three additional avenues for engagement: policy or sector-based crediting, a relaxation of strict ton-for-ton accounting to encourage a wider variety of actions, and a deal-based approach to major development, security, and conventional pollution projects with significant carbon-saving consequences.

Finally, all of this needs to be rolled together with a more extensive program to evaluate national actions after the fact. This kind of feedback on existing policy and actions can replace the up-front negotiation of targets in order to help countries stay synchronized with each other's level of effort, as well as to provide a forum for countries to challenge each other toward stronger actions.

In summary, a future climate regime based on the practical experience of the past ten years is likely to look considerably different than the current Kyoto Protocol. Such a regime could usefully involve more flexible commitments, a smaller number of initial participants, increased attention to technology, broader engagement of developing countries, and explicit

efforts to evaluate national policies and actions after they are implemented. These changes also reflect the arguable trend in U.S. policymaking, as evidenced by a recent proposal by Sen. Bingaman and based on work by the NCEP. In this way, there is a real possibility that action in the United States, the European Union, and elsewhere could gradually converge under a common agreement in the coming years.

References

Aguilar, Soledad, Alexis Conrad, María Gutiérrez, Kati Kulovesi, Miquel Muñoz, and Chris Spence. 2005. Summary of the eleventh Conference of the Parties to the UN Framework Convention on Climate Change and First Conference of the Parties serving as the Meeting of the parties to the Kyoto Protocol: 28 November–10 December 2005. *Earth Negotiations Bulletin* 12(292).

Bell, Ruth Greenspan, and Clifford S. Russell. 2002. Environmental policy for developing countries. *Issues in Science and Technology* 18(Spring).

Bodansky, Daniel, Elliot Diringer, Jonathan Pershing, and Xueman Wang. 2004. *Strawman Elements: Possible Approaches to Advancing International Climate Change Efforts*. Washington, DC: Pew Center on Global Climate Change.

Congressional Research Service. 2001. Treaties and Other International Agreements: The Role of the United States Senate. Washington, DC: Congressional Research Service.

Kruger, Joseph, and William Pizer. 2006. Regional Greenhouse Gas Initiative: Prelude to a Federal Program? Washington, DC: Resources for the Future.

Meltz, Robert. 2006. Global Warming: The Litigation Heats Up. Washington, DC: Congressional Research Service.

National Commission on Energy Policy (NCEP). 2004. Ending the Energy Stalemate. Washington, DC: NCEP.

Victor, David G. 2006. *Engaging Developing Countries: Beyond Kyoto*. Available at: http://www.weathervane.rff.org/process_and_players/Policy_Collaboration/Understanding_Transaltantic_Differences/Presentations/RFFPresentation_UnderstandingTransatlanticDifferences_03_02_06_6-victor.pdf (accessed April 14, 2006).

Table

Table 1. Summary of CO_2 Prices

Program	Price	Price ($)	Notes
EU Emissions Trading Scheme	€15-25/tCO2	$20-30/tCO2	Trading range in 2006
Canada LFE program*	C$15/tCO2	$13/tCO2	Safety-valve price
New Zealand tax*	NZ$15/tCO2	$9/tCO2	Initial rate
Japan tax*	¥2,500-3,000 / tC tax	$5-6/ tCO2	Proposed rate
Bingaman (U.S.)*	$7/tCO2	$7/tCO2	Safety-valve price
McCain-Lieberman (U.S.)*	$15-30/$tCO_2$	$15–30/tCO2	Estimated price

*Proposed
Source: NCEP (2004).